



**MARICOPA COUNTY DEPARTMENT OF PUBLIC HEALTH  
DIVISION OF DISEASE CONTROL  
OFFICE OF EPIDEMIOLOGY**

**HEAT-ASSOCIATED DEATHS IN  
MARICOPA COUNTY, AZ  
PRELIMINARY REPORT\* FOR 2012**

**June 2013**

\*Thirteen cases pending

## **Table of Contents**

Acknowledgements.....	3
Background.....	4
Method.....	4
Results.....	6
Heat-Associated Deaths by Year .....	6
Heat-Associated Deaths by Month, 2012 .....	8
Heat-Associated Deaths by Residency .....	9
Heat-Associated Deaths by Gender .....	10
Heat-Associated Deaths by Age.....	11
Heat-Associated Deaths by Years of Life Spent in Arizona, 2012.....	13
Heat-Associated Deaths by Race .....	14
Heat-Associated Deaths by Place of Occurrence and Air Conditioning (AC) Status.....	16
Heat-Associated Deaths among Individuals who are Homeless.....	18
Conclusions – Heat-Associated Deaths 2012.....	20
New Heat Surveillance Methods .....	<b>Error! Bookmark not defined.</b>
Future Plans.....	<b>Error! Bookmark not defined.</b>
APPENDIX .....	22
Graph A. Heat-Associated Deaths by Date of Death and Temperatures .....	22
Table A. Heat-Associated Deaths by Gender and Age .....	23
Table B. Heat-Associated Death Rates by Gender and Age.....	24
Table C. Heat-Associated Death Rates by Age Group and Race/Ethnicity .....	24
Table D. Heat-Associated Death Rates by Gender and Race/Ethnicity .....	25
Table E. Heat-Associated Deaths by Place Injury Occurred and Age .....	25
Table F. Heat-Associated Deaths by Place of Injury Occurrence, Age, and Gender .....	26
Table G. Heat-Associated Deaths by Use of Air Conditioning (AC) and Age Group.....	26
Table H. Drug and Alcohol Use by Homelessness .....	26
Table I. Heat-Associated Deaths by Smoking/Tobacco Use.....	27
Table J. Heat-Associated Deaths by Industry .....	27
Table K. Heat-Associated Deaths by Education Category .....	28

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- Maricopa County Office of the Medical Examiner (OME)
- Maricopa County Office of Vital Registration (OVR)
- Arizona Department of Health Services (ADHS), Office of Vital Registration
- National Weather Service (NWS)
- Maricopa Association of Governments (MAG)
- Local hospitals (infection preventionists, emergency departments, social worker staff)

## **Background**

In July 2005, Maricopa County (MC) experienced exceptionally high temperatures that contributed to 45 deaths, 35 occurring over 9 consecutive days. Temperatures reached 116° F and three excessive heat warnings were issued during this month. To track these deaths, the Maricopa County Department of Public Health (MCDPH) created a novel and effective approach for surveillance of heat-associated deaths and has continued to use this system annually. The enhanced heat surveillance season usually begins in May and ends in October. During 2012, a few outlying cases expired in November, however the original exposure occurred during the summer months, which ultimately led to decline.

## **Method**

Surveillance data is obtained from the following sources:

1. The Maricopa County Office of the Medical Examiner (OME) forwards suspected heat-related deaths to MCDPH and provides data including demographics, preliminary information regarding how the death occurred, and the circumstances of death. In the past, this information came solely as a weekly line list with limited information for each case. However, in February of 2012, MCDPH started receiving all preliminary reports of death (PRODs) from the OME. These reports provide expanded information on a daily basis and have changed the screening methods used by MCDPH staff to ensure that all potential heat-related deaths are documented.
2. The Arizona Department of Health Services has a vital records database containing death certificates. MCDPH searches this database looking for causes of death associated with environmental heat. A Statistical Analysis Software (SAS) program looks for the key phrases and International Classification of Disease-10 (ICD-10) codes listed below.

<b>Key Phrases</b>	
HEAT EXPOSURE	
ENVIRON	
EXHAUSTION	
SUN	
HEAT STRESS	
HEAT STROKE	
HYPERTHERMIA	

<b>ICD 10 Code</b>	<b>Corresponding Definition</b>
X30	Exposure to excessive natural heat
T67.X	Effects of heat and light
P810	Environmental hyperthermia of newborn

3. Hospital and media reports can sometimes initiate a heat death investigation, for example, if a child is reportedly left in a hot car.

Once data are received, analysis of the information is required to identify only those deaths caused as a result of environmental heat. Environmental heat is heat generated by the climate (sun, humidity, etc.) rather than heat from man-made sources such as ovens or manufacturing equipment. Heat-associated deaths are categorized based on the classification criteria listed below:

**Heat-caused (HC) deaths** are those in which environmental heat was directly involved in the sequence of conditions causing deaths. These are deaths where environmental heat terms were indicated in Part I of the death certificate causes of death (diseases or conditions in the direct sequence causing death), for cause of death variables (*cod\_a*, *cod\_b*, *cod\_c*, or *cod\_d*). County of death: Maricopa.

**Heat-related (HR) deaths** are those in which environmental heat contributed to the deaths but was not in the sequence of conditions causing these deaths. These are cases where environmental heat terms were mentioned in Part II of the death certificate causes of death (diseases and conditions contributing but not directly resulting in the death sequence), but not in any of the Part I death variables (*cod\_a*, *cod\_b*, *cod\_c*, or *cod\_d*). County of death: Maricopa.

Part I and Part II of the death certificate are as follows:

**Part I of the death certificate:** *cod a* – is the immediate cause (final disease or condition resulting in death) *cod b*, *cod c*, *cod d* – are sequentially listed conditions leading to the cause listed on *cod a*.

**Part II of the death certificate:** Other significant conditions contributing to death but not resulting in the underlying cause given in Part I.

For the purposes of this report, heat-caused and heat-related deaths are combined and referred to as “heat-associated deaths.” Please note that most jurisdictions report only heat-caused deaths. This should be considered when comparing Maricopa County data with data from other locations.

Death certificate data, in combination with the OME notes, are used to produce the information that is contained in this report. Total case count, demographics, residency, drug/alcohol use, and years lived in Arizona are directly retrieved from death certificate data. Place of death location, indoor/outdoor occurrence, air conditioning use, and homelessness are retrieved based on explicit notations made in the death certificate and/or OME notes.

Homelessness is defined as having an address on the death certificate that matches a homeless shelter, government agency, business, or an intersection. Cases are also classified as homeless if there is an indication on the death certificate. If the address is listed as unknown on the death certificate then an examination of the medical examiner’s notes is made to determine if there is a reference to an address - if none, then the person is classified as homeless. If the address is listed as out of jurisdiction then time spent in Arizona, as provided by the death certificate, is taken into consideration.

Once classification is completed, the data are summarized for the production and dissemination of reports. Reports are generated weekly during the season and posted to the MCDPH website which can be found at:

<http://www.maricopa.gov/publichealth/Services/EPI/Reports/heat.aspx>

## Results

### Heat-Associated Deaths by Year

**Table 1.** On average, over 100 suspected heat-caused/heat-related deaths (heat-associated deaths) have been investigated each year from 2006 through 2012 totaling 904 cases over the seven-year period. Of these cases, 61% were confirmed as being heat-associated deaths.

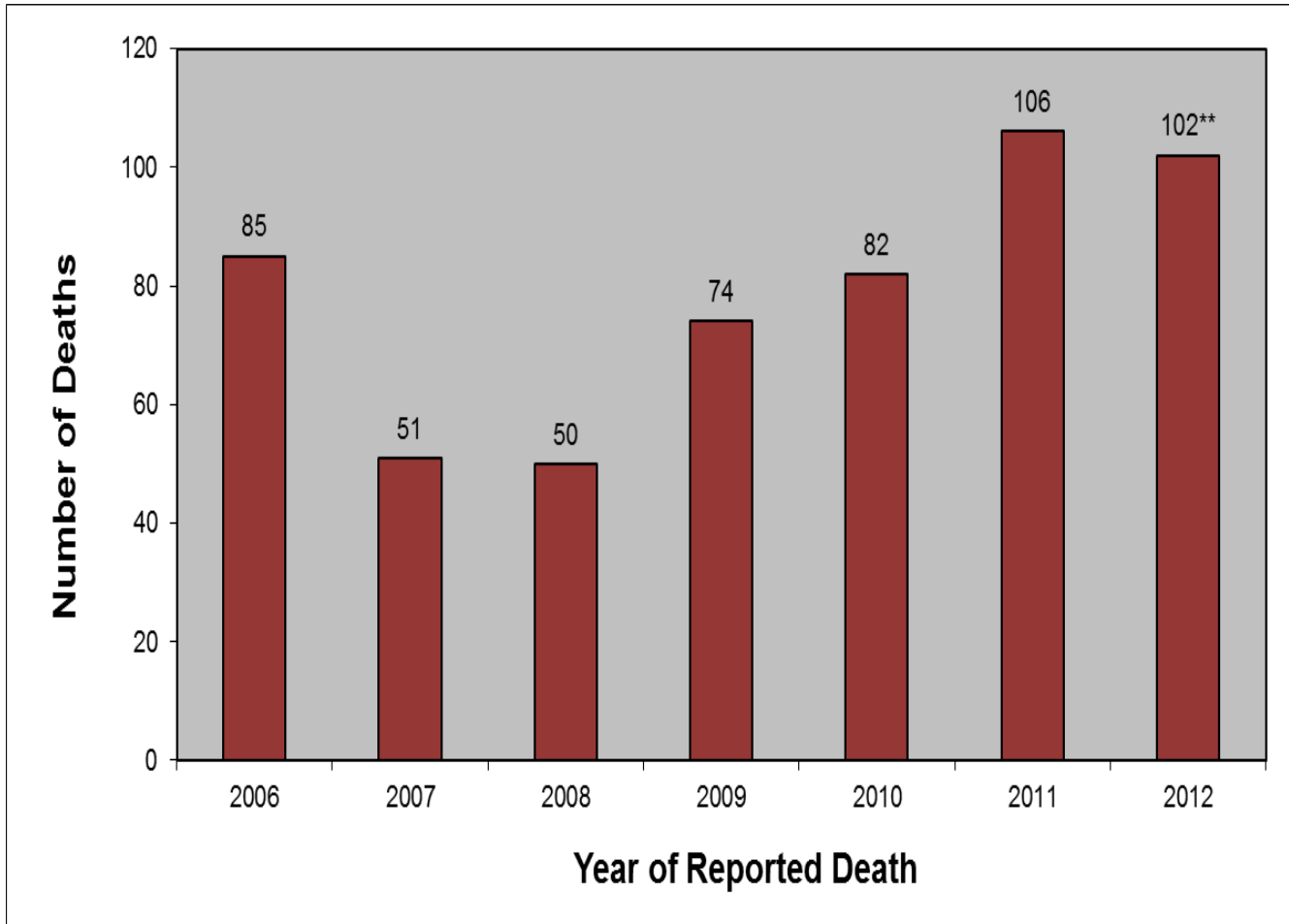
**Table 1. Heat-Associated Deaths Reported (and Percentages) in Maricopa County: 2006-2012**

Year	Total Reported	Confirmed	Ruled-Out	Pending
2006	104	85 (83%)	19 (17%)	0 (0%)
2007	131	51 (39%)	80 (61%)	0 (0%)
2008	97	50 (52%)	47 (48%)	0 (0%)
2009	114	74 (65%)	40 (35%)	0 (0%)
2010	142	82 (58%)	60 (42%)	0 (0%)
2011	144	106 (74%)	38 (26%)	0 (0%)
2012	172	102 (59%)	57 (33%)	13* (8%)
Total	904	550 (61%)	341 (38%)	13* (1%)

\*As of 3/29/2013, 13 cases are still pending a final cause of death. The numbers in this report are provisional and will be updated once these cases have been classified.

**Graph 1.** The number of heat-associated deaths reported in 2012 was 102, which is the second highest number of heat-associated deaths in Maricopa County in over ten years. The graph shows that after a decline in 2007 and 2008, heat mortality peaked in 2011 and continued to remain elevated in 2012, although these numbers are still provisional.

**Graph 1. Heat-Associated Deaths by Year, Maricopa County: 2006-2012\***



**Data Sources:** Maricopa County, Office of Vital Registration and Office of Medical Examiner; Arizona Department of Health Services, Office of Vital Registration

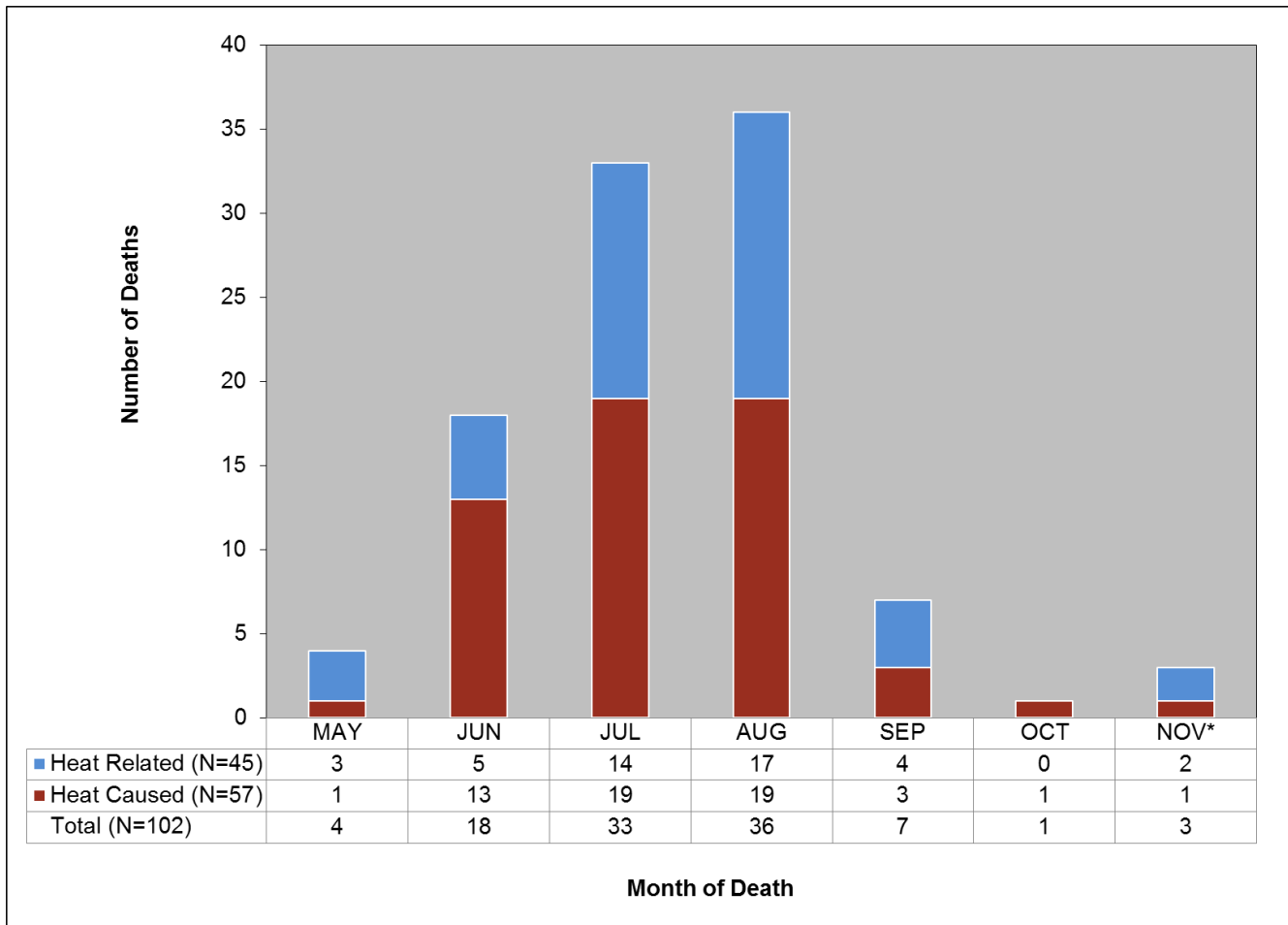
\*The numbers reported here are for heat-associated deaths reported to MCDPH as of 3/29/2013.

\*\*Thirteen cases still pending a final cause of death.

## Heat-Associated Deaths by Month, 2012

**Graph 2.** In 2012, August was associated with the highest heat-associated mortality with more than one third of the year's 102 deaths occurring in this month. The majority of 2012 deaths were classified as heat-caused (55.9%), with the remainder classified as heat-related (44.1%).

**Graph 2. Heat-Associated Deaths by Month, Maricopa County, 2012**



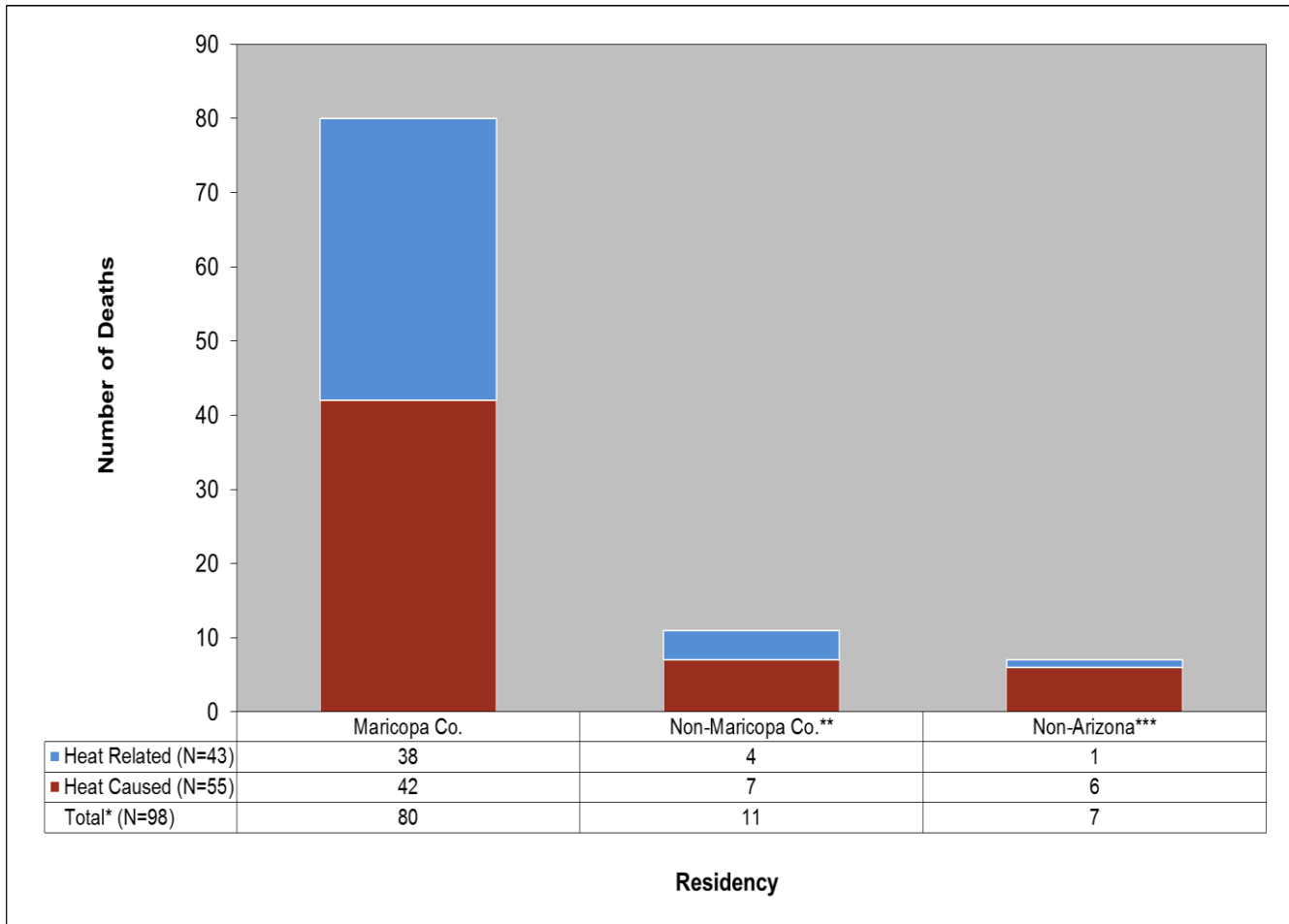
\*The three deaths that occurred in November were results of heat-associated injuries that occurred over the summer.



## Heat-Associated Deaths by Residency

**Graph 3.** Residency was identified for 98 of the 102 heat-associated deaths in 2012. The cases for which residency could not be established were excluded from this graph. Most cases (81.6%) were Maricopa County residents.

**Graph 3. Heat-Associated Deaths by Residency (n=98), Maricopa County, 2012**



\*Excludes four cases where residency could not be established.

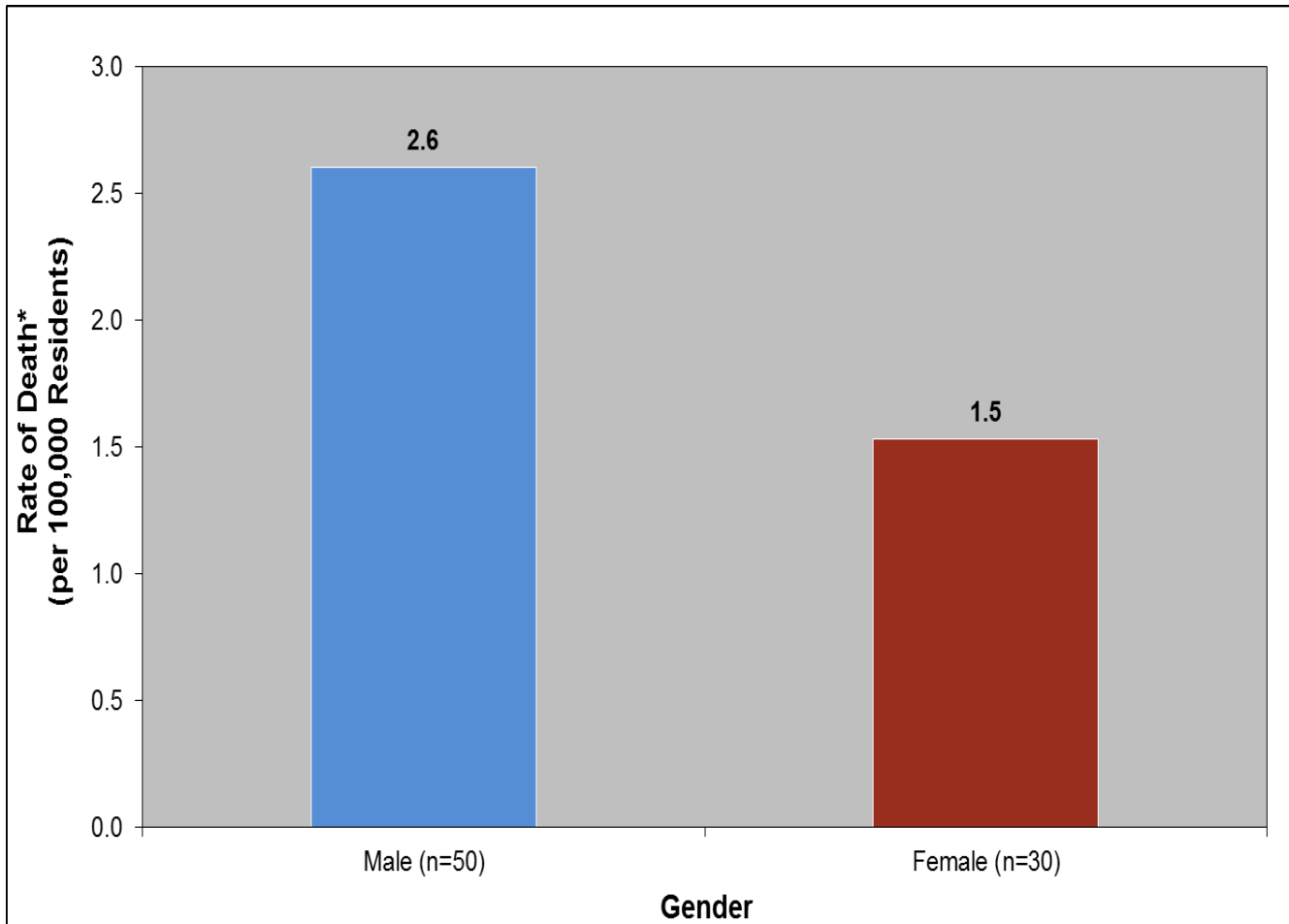
\*\*Non-Maricopa residents include Apache (1), Cochise (1), La Paz (1), Mohave (1), Pinal (1) and other unidentified AZ counties (6).

\*\*\*Non-Arizona residents include six US residents (AR, CA (3), IA, MN) and one non-US resident (Mexico).

## Heat-Associated Deaths by Gender

**Graph 4.** The pattern for heat-associated deaths is different for males and females. The majority of deaths occurred among males (64.7%). Additionally, the mortality rate for males was nearly double the rate for females (2.6 and 1.5 deaths per 100,000 residents, respectively). [For more detailed results on gender, [See Appendix, Table A](#)]

**Graph 4. Heat-Associated Death Rates per 100,000 Maricopa County Residents\* by Gender (n=80), Maricopa County, 2012**

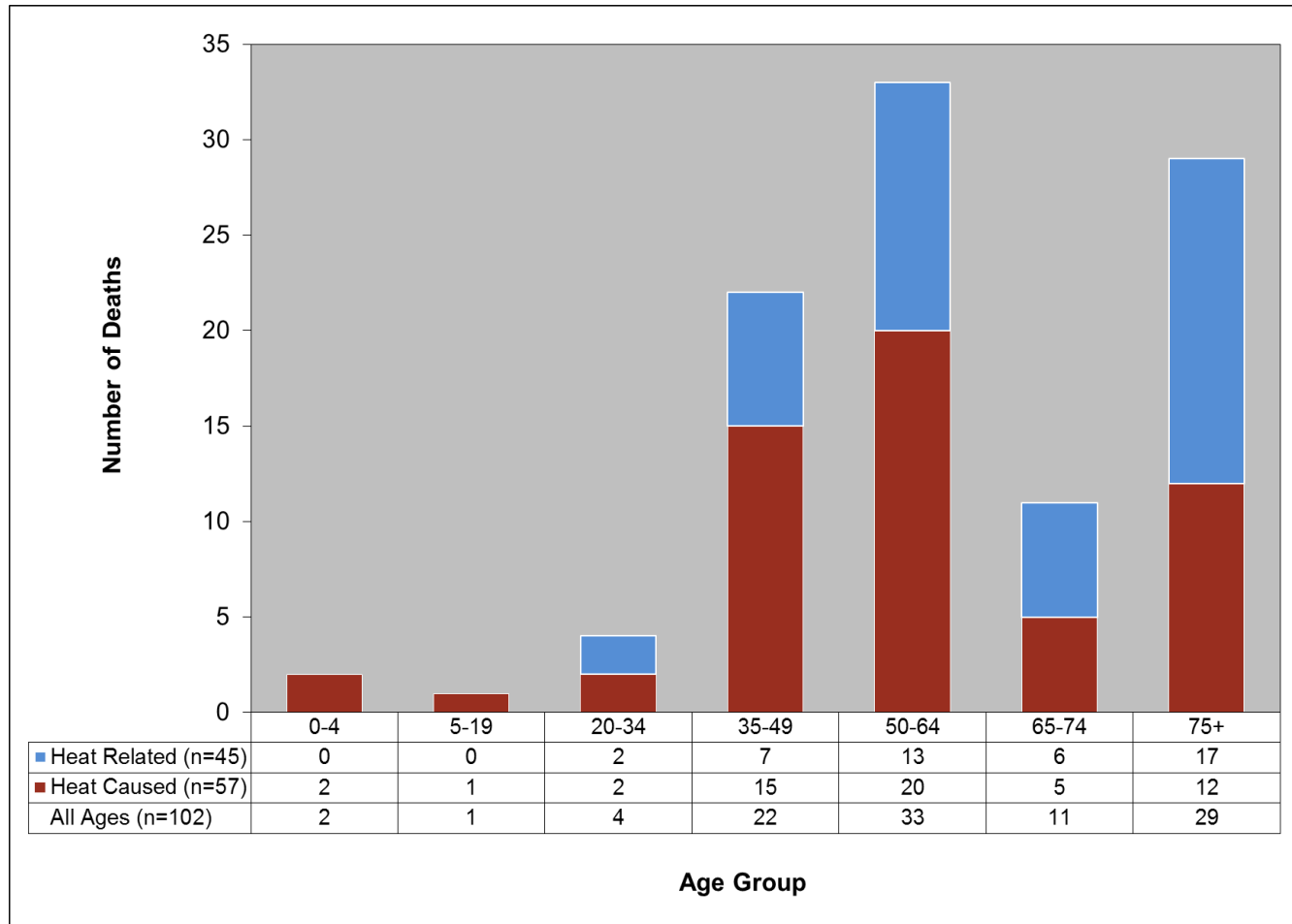


\*Based on 2011 Census population estimates for Maricopa County. Excludes twenty-two cases that were not Maricopa County residents.

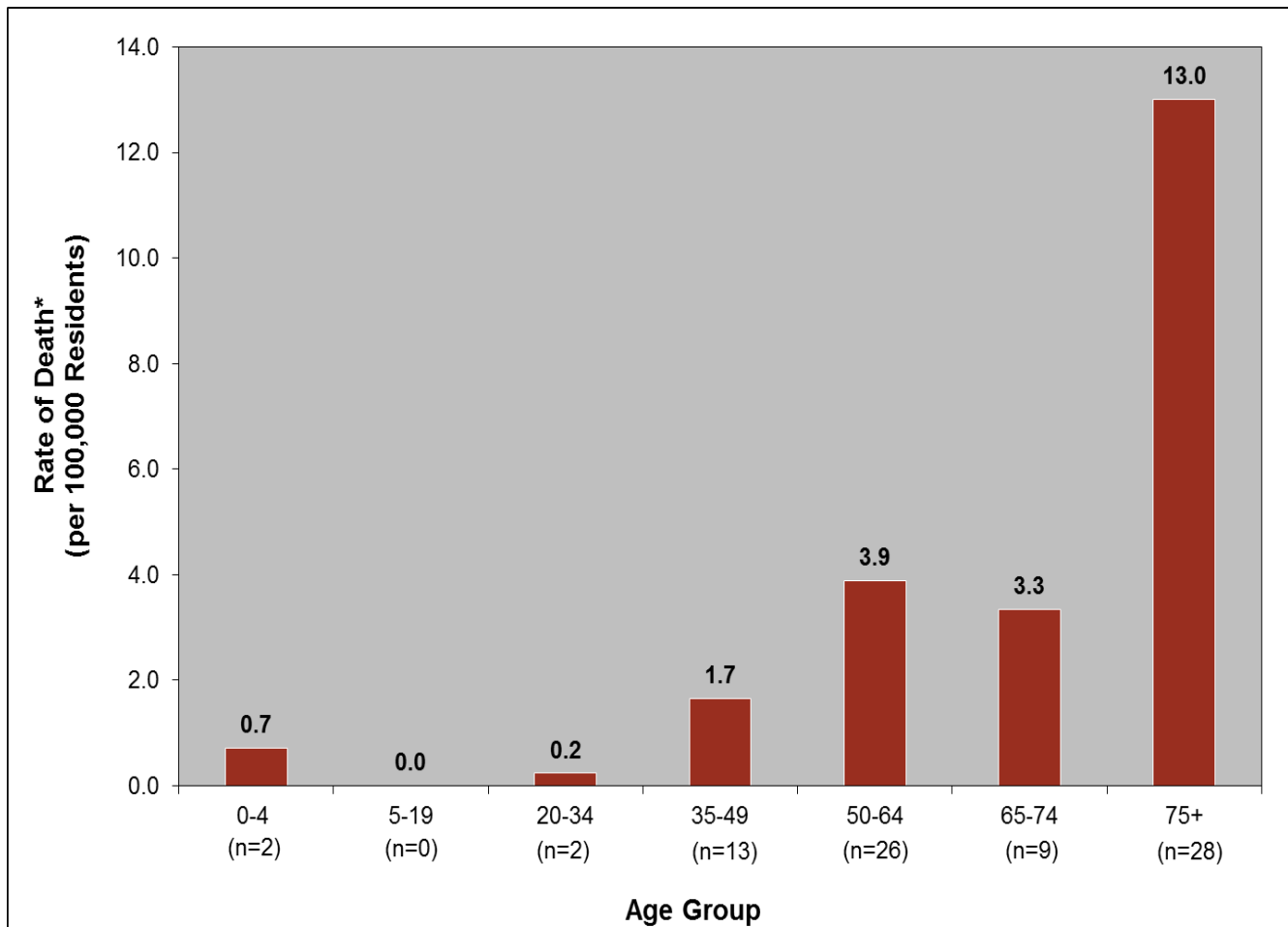
## Heat-Associated Deaths by Age

**Graphs 5-6.** The highest incidence of heat-associated death occurred among individuals 50-64 years of age (33.3%) followed by those 75 and older (28.4%). The data show that the heat-associated mortality rate begins to increase in the 50-64 year old age group, with a substantial increase among the 75+ age group (Graph 6). Two pediatric deaths occurred in 2012, both among children under the age of five. [For more detailed results on age, [See Appendix, Tables A-B](#)]

**Graph 5. Heat-Associated Deaths by Age Group, Maricopa County, 2012**



**Graph 6. Heat-Associated Death Rates per 100,000 Maricopa County Residents\* by Age Group (n=80), Maricopa County, 2012**

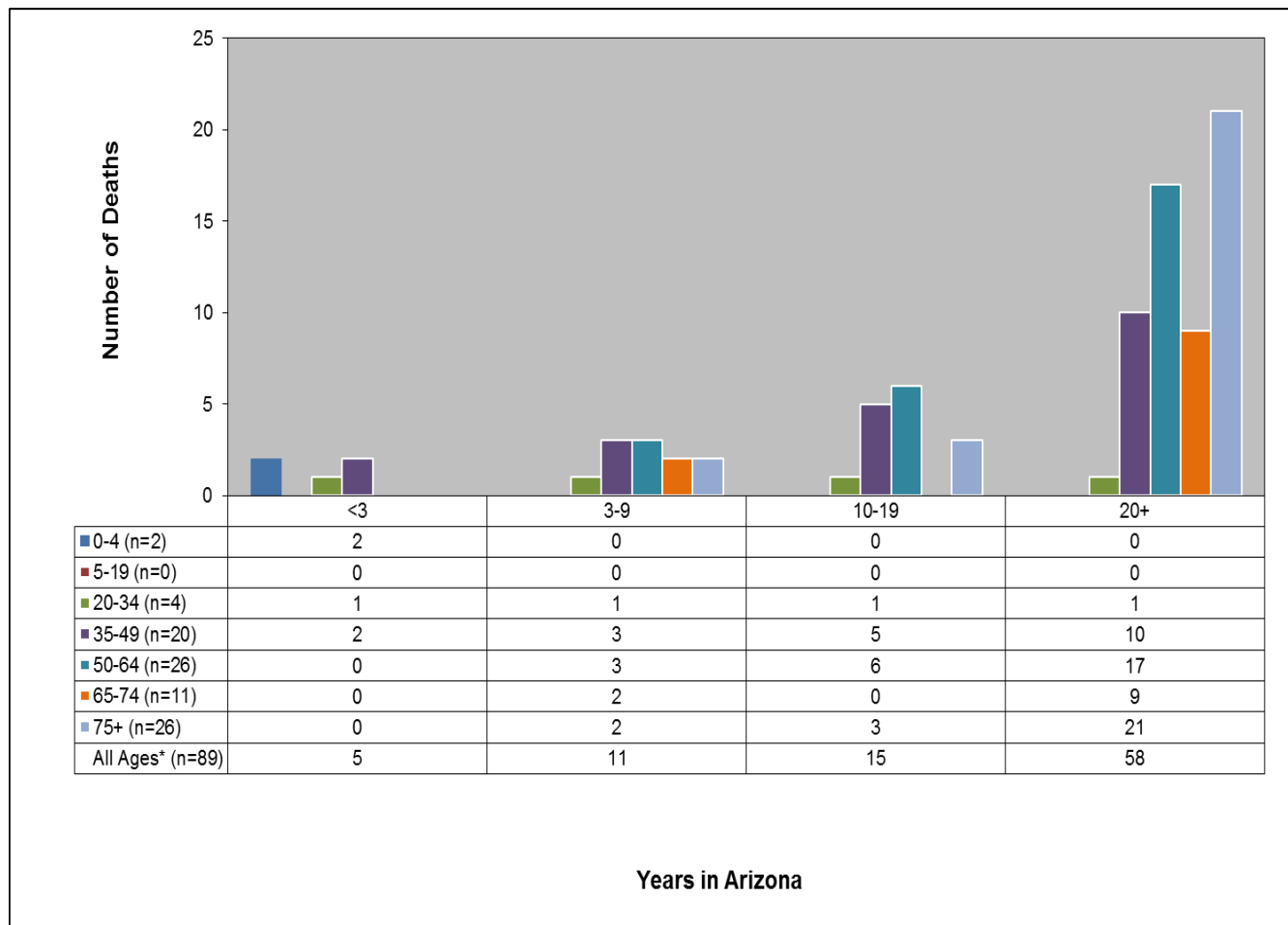


\*Based on 2011 Census population estimates for Maricopa County. Excludes twenty-two cases that were not Maricopa County residents.

## Heat-Associated Deaths by Years of Life Spent in Arizona, 2012

**Graph 7.** Of the 89 decedents for whom time spent in Arizona was known, 65.2% resided in Arizona for 20 years or more. Additionally, the majority of decedents (82.0%) had lived in Arizona for at least 10 years. The graph illustrates that heat mortality in our community may not necessarily be the result of non-acclimatization to our climate since the majority of decedents have resided in Arizona for more than 10 years, although the age distribution of decedents falling into the larger “Years in Arizona” categories should be considered.

**Graph 7. Heat-Associated Deaths by Years of Life Spent in Arizona and Age Group (n=89), Maricopa County, 2012**

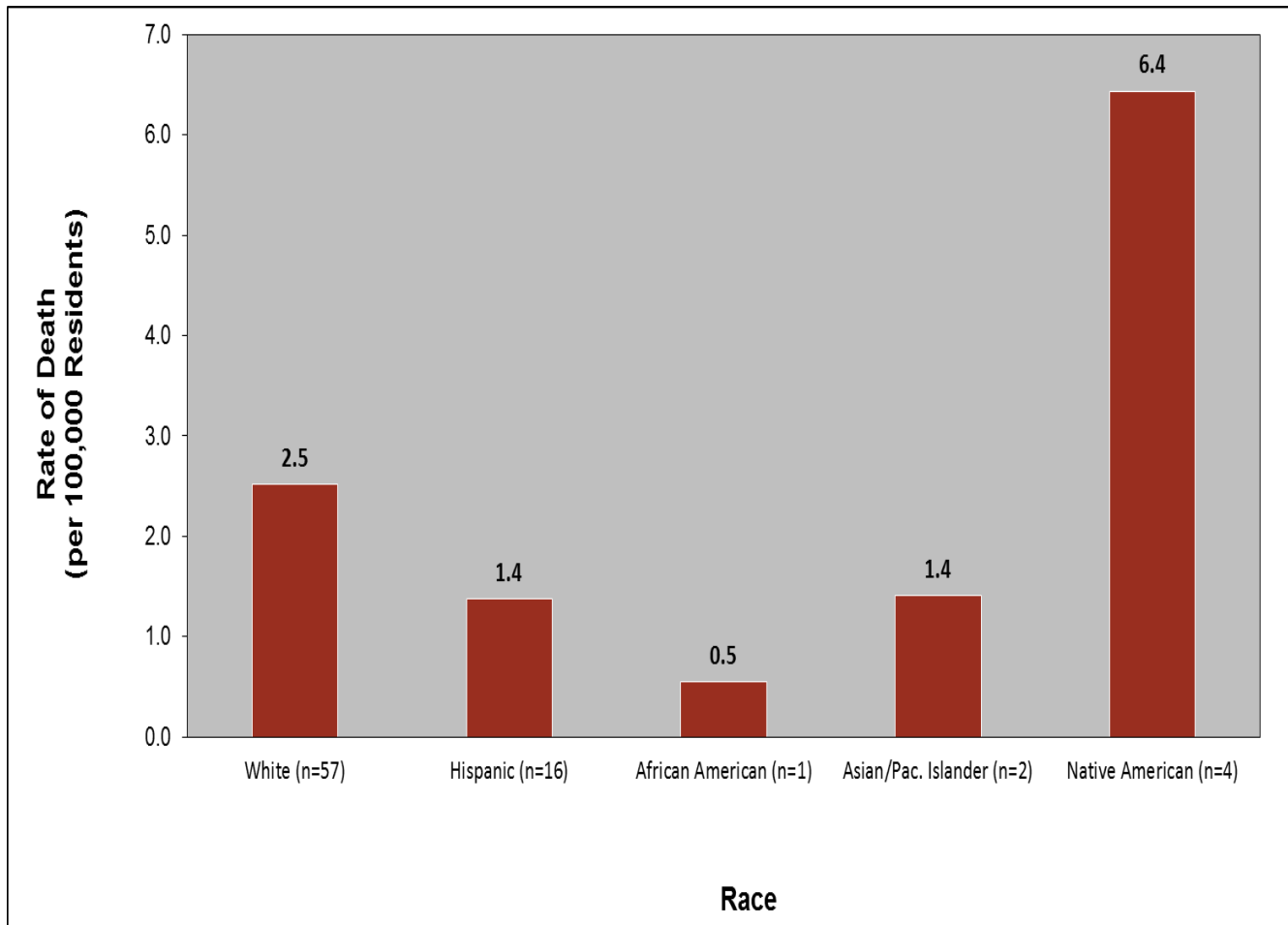


\*Excludes thirteen cases for which time spent in Arizona was unknown at the time of analysis.

## Heat-Associated Deaths by Race

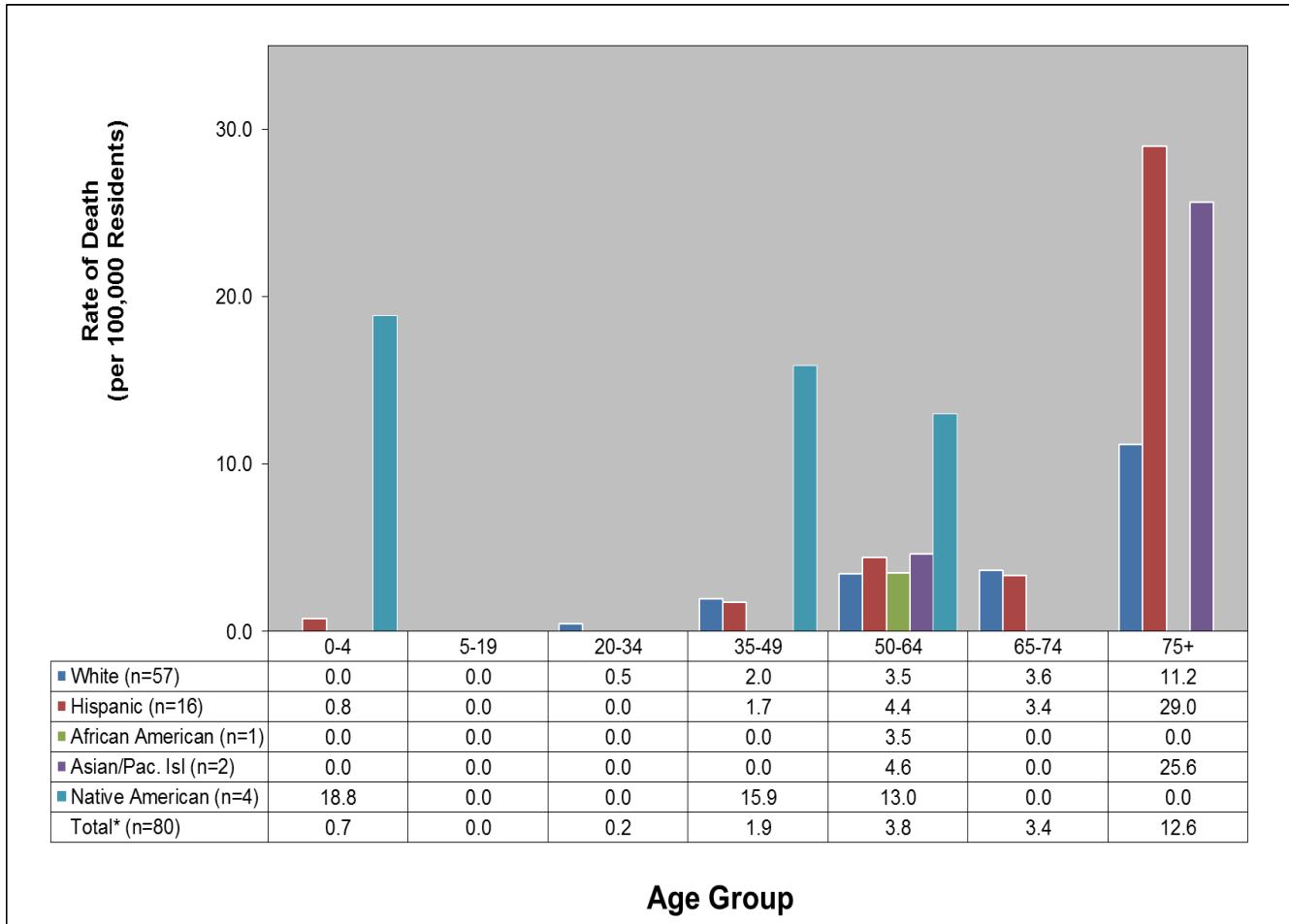
**Graph 8-9.** Although whites and Hispanics reported the highest number of heat-associated deaths overall (66.7% and 17.6%, respectively), Native Americans had the highest rate (6.4 per 100,000 residents) of heat-associated deaths compared to all other races. When stratifying by age, as seen in Graph 9, the highest death rate of any age or race/ethnicity group is 29.0 per 100,000 residents among Hispanics aged 75+ years. Relatively high rates of death are also seen in Asian/Pacific Islanders 75+ years (25.6 per 100,000), and Native Americans 0-4 years (18.8 per 100,000). However, due to the small number of heat-associated deaths, rates may vary significantly each year. [For more detailed results on race/ethnicity, [See Appendix, Tables C-D](#)]

**Graph 8. Heat-Associated Death Rates per 100,000 Residents\* by Race/Ethnicity (n=80), Maricopa County, 2012**



\*Based on 2011 Census population estimates for Maricopa County. \*Excludes twenty-two cases that were not Maricopa County residents.

**Graph 9. Heat-Associated Death Rates per 100,000 Residents\* by Race/Ethnicity and Age Group (n=80), Maricopa County, 2012**

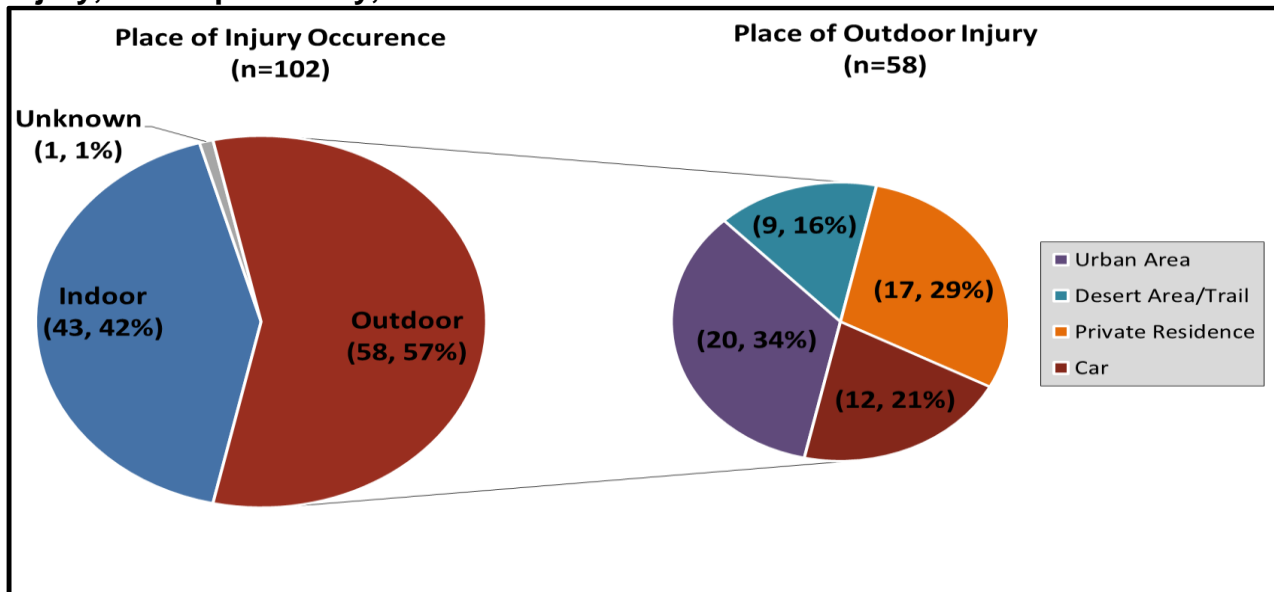


\*Based on 2011 Census population estimates for Maricopa County. Excludes twenty-two cases that were not Maricopa County residents.

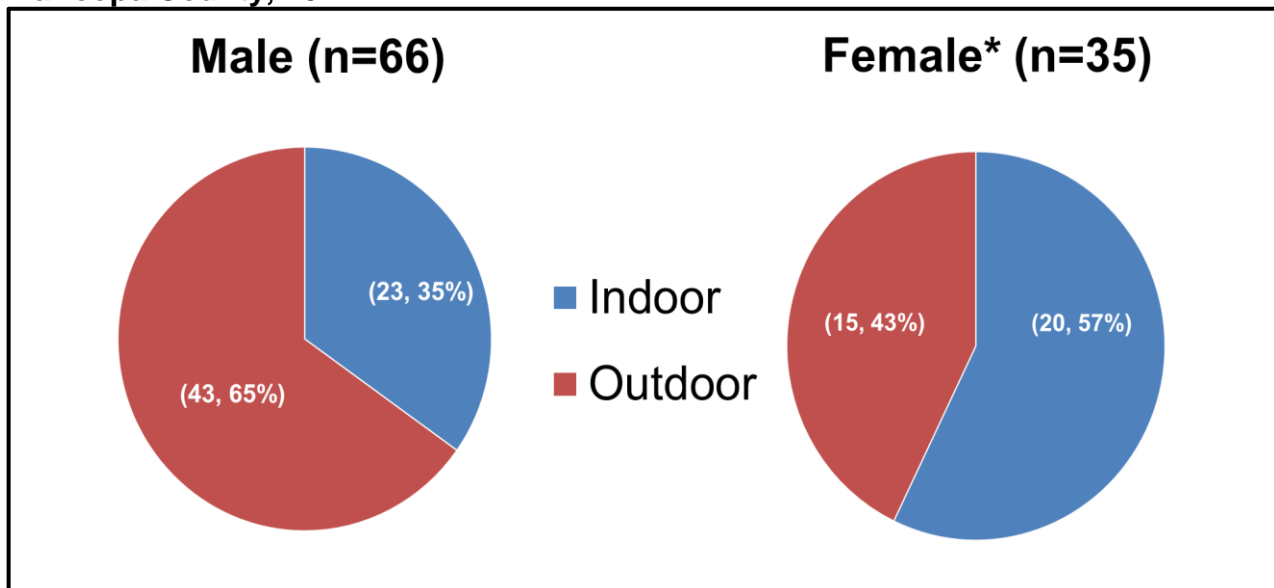
## Heat-Associated Deaths by Place of Occurrence and Air Conditioning (AC) Status

**Graphs 10-11.** Graph 10 illustrates that 57% of heat-associated deaths in 2012 occurred outdoors. These deaths most often occurred in urban areas (34%) or at private residences (29%). The majority of all 102 deaths occurred at a private residence (58.8%) which accounted for all indoor deaths. Graph 11 shows that more men died outdoors (65%), while more women (57%) died indoors. [For more detailed results on place of injury, [See Appendix, Tables E-F](#)]

**Graph 10. Heat-Associated Deaths by Place of Occurrence and Place of Outdoor Injury, Maricopa County, 2012**



**Graph 11. Heat-Associated Deaths by Gender and Place of Injury Occurrence, Maricopa County, 2012**

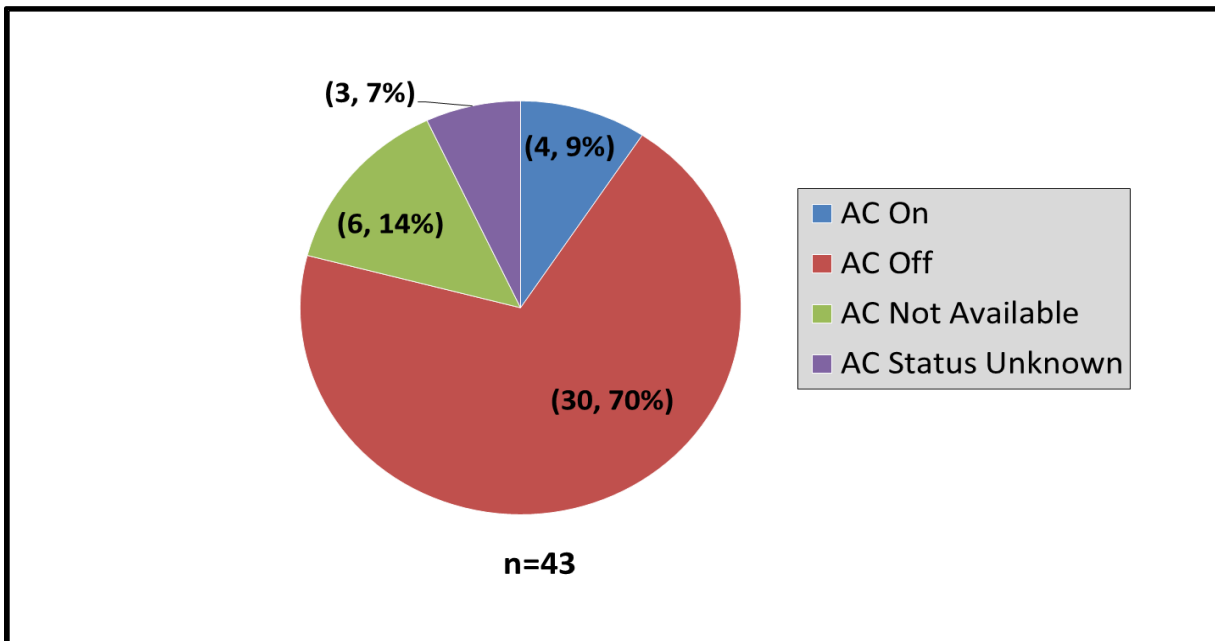


\*Excludes one female case where place of injury (indoor/outdoor) was unknown

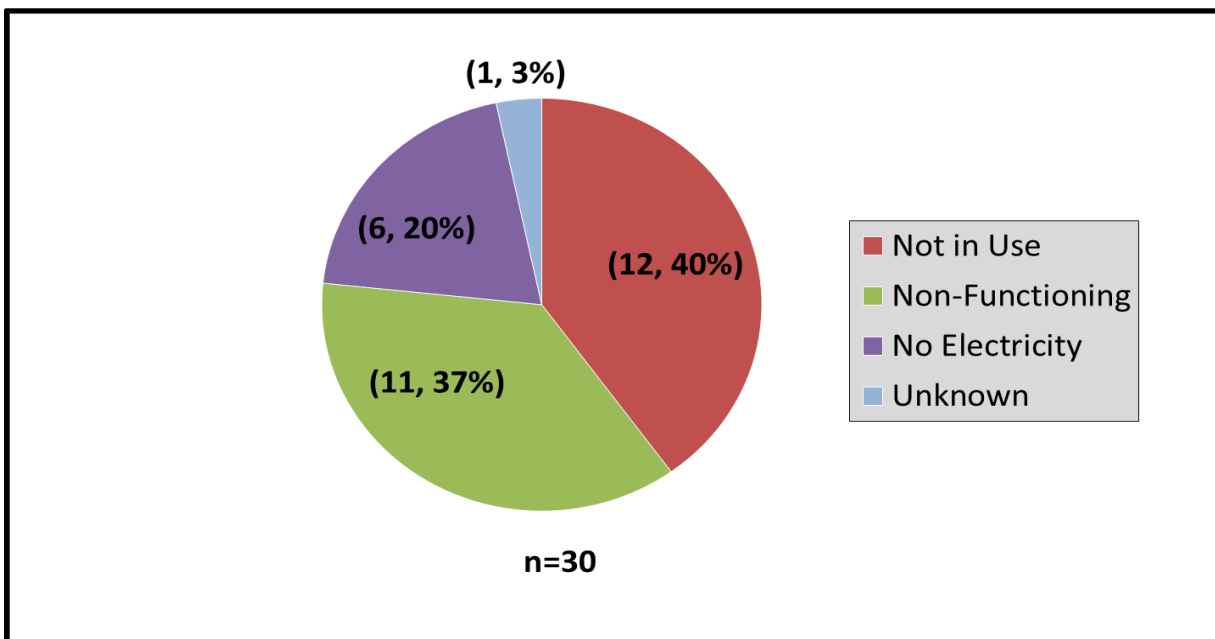


**Graphs 12 – 13.** Among indoor occurring deaths, 84% did not have air conditioning (AC) in use or it was not present, 9% had functioning air conditioning that was turned on, and 7% had an unknown AC status (Graph 12). Of the 70% who did not have air conditioning turned on, the majority (57%) were either non-functioning or did not have electricity (Graph 13). [For more detailed results on AC status, [See Appendix, Table G](#)]

**Graph 12. Indoor Occurring Heat-Associated Deaths by Use of Air Conditioning (n=43) Maricopa County, 2012**



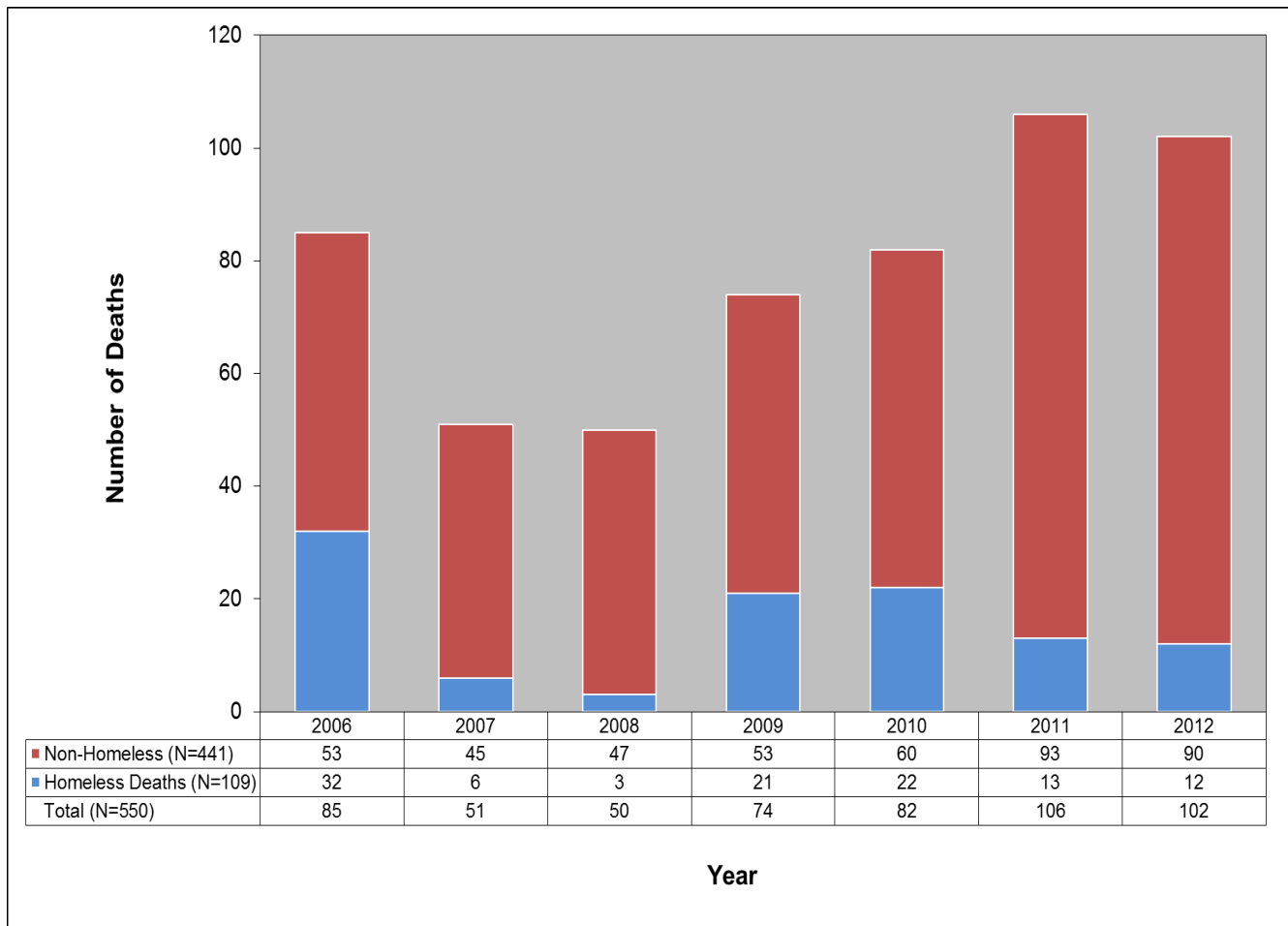
**Graph 13. Air Conditioning Status for Cases who did not have Air Conditioning Turned On (n=30), Maricopa County, 2012**



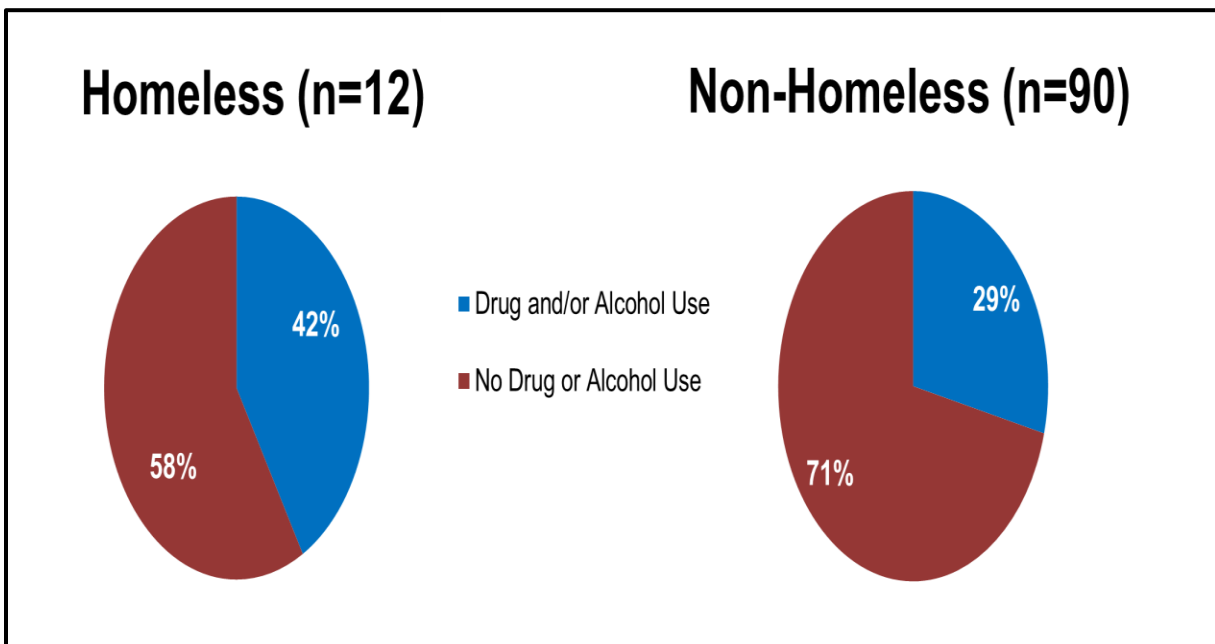
## Heat-Associated Deaths among Individuals who are Homeless

**Graphs 14 – 16.** In 2006, 32 heat-associated deaths (38% of the 2006 total) occurred among homeless persons. In 2007, heat-associated deaths among homeless persons decreased to 6 (12%), and decreased again in 2008, to 3 (6%). In 2009 and 2010 the number of heat-associated deaths in homeless persons increased to 21 (28%) and 22 (27%), respectively. Heat-associated deaths in homeless persons decreased to 13 (12%) in 2011, and to 12 (12%) in 2012 (Graph 14). Graph 15 shows that of the 12 individuals who are homeless and died in 2012, 42% had drugs or alcohol listed among their causes of death compared to 29% of non-homeless persons. Drug and alcohol use was more commonly associated with deaths among the homeless than deaths among those with a residence at the time of death. Reports of drug and alcohol use were obtained both from the death certificate and the Medical Examiner's preliminary report of death, which doesn't indicate whether the drugs or alcohol contributed to the death (Graph 16). [For more detailed information on the homeless, [See Appendix, Table H](#)]

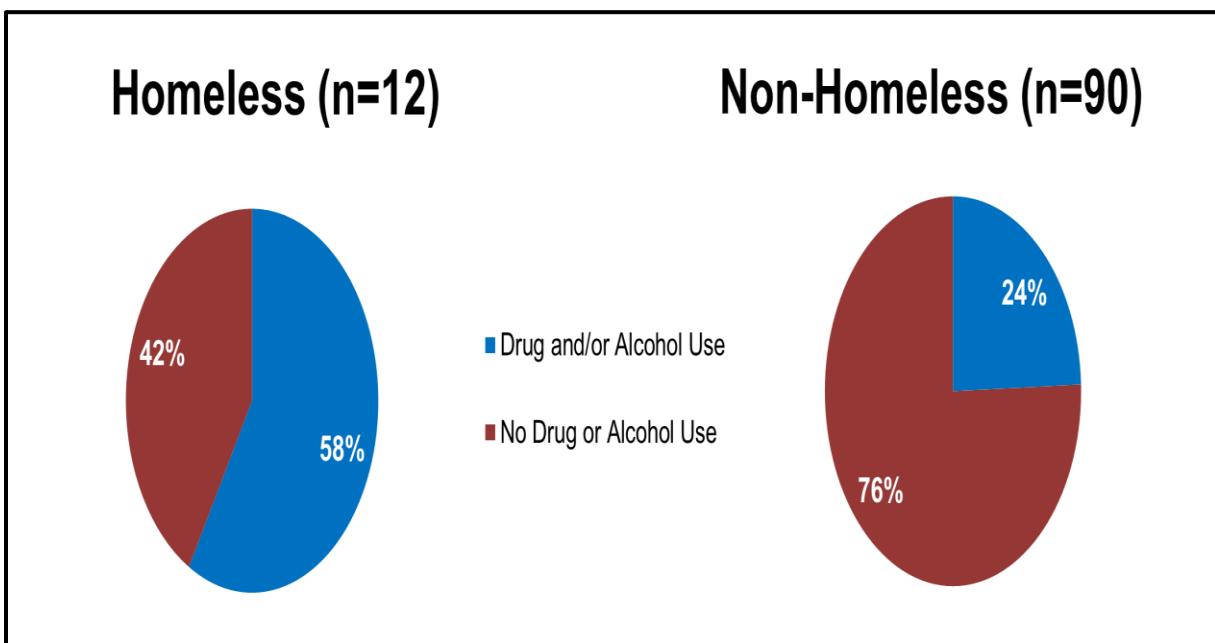
**Graph 14. Homeless Heat-Associated Deaths, Maricopa County, 2006-2012**



**Graph 15. Drug and Alcohol Use, as Mentioned on the Death Certificate for Heat-Associated Deaths by Homelessness, Maricopa County, 2012**



**Graph 16. Drug and Alcohol Use, as Mentioned by the Medical Examiner for Heat-Associated Deaths by Homelessness, Maricopa County, 2012**



## **Conclusions – Heat-Associated Deaths 2012**

1. The 102 preliminary confirmed heat-associated deaths in 2012 represents the second highest number of deaths recorded since enhanced surveillance began in 2006. This number may increase once the remaining 15 cases are fully investigated.
2. The majority of heat-associated deaths were heat-caused (as opposed to heat-related). This means that the majority of deaths were cases in which environmental heat was directly involved in the sequence of conditions causing death.
3. The majority of heat-associated deaths occurred during the month of August. August had nine days of excessive heat warnings, all of which were consecutive (8/6/2012 – 8/14/2012). For comparison, July had only two days of consecutive excessive heat warnings.
4. Most decedents, for whom residency was known, were residents of Maricopa County (82%) or Arizona (11%).
5. The majority of decedents were not newcomers to Arizona. For decedents whose location and length of residency were known, only about one in eighteen lived in Arizona for less than three years.
6. Most heat-associated deaths occurred among males 20-64 years of age.
7. Three deaths occurred in people 19 years old or younger this year; two of which occurred in a child less than 5 years of age.
8. Heat-associated deaths among men tended to occur among those under 65 years old, while deaths among women were more distributed above and below 65 years of age.
9. The majority of deaths (57%) occurred outdoors, about one third of which occurred in urban areas.
10. Heat-associated deaths among men occurred more often outdoors; however a larger proportion of deaths among women occurred indoors.
11. All heat-associated deaths that occurred indoors, occurred at a private residence. For nearly three quarters of these indoor deaths, the air conditioning unit was not in use because it was either non-functioning or the home did not have electricity.
12. Approximately one in twelve heat-associated deaths in 2012 occurred in an individual identified as homeless, which is similar to 2011.
13. Drug or alcohol use is highly prevalent among individuals who die of heat related causes; the proportion of heat-associated deaths associated with drug or alcohol use is higher among those identified as homeless than those who are not.
14. MCDPH staff identified seven heat-related deaths that were covered by a media report.

## **New Heat Surveillance Methods**

The Maricopa County Office of the Medical Examiner (OME) forwards suspected heat-related deaths to MCDPH and provides data including demographics, preliminary information regarding how the death occurred, and the circumstances of death. In the past, this information came solely as a line list with limited information for each case. However, in February of 2012, MCDPH started receiving all preliminary reports of death (PRODs) from the OME. These reports provide expanded information in a timely manner increasing the sensitivity of MCDPH screening methods.

## **Future Plans**

One of the goals of the MCDPH heat surveillance program is to obtain more detailed information pertaining to the circumstances surrounding heat-associated mortality. More complete data on air conditioning status was obtained this year through the review of PRODs from the Medical Examiner. In the future, information about activities just prior to death (e.g. working, exercising, etc.) could provide insight into the implementation of future interventions and education. Analyses of additional risk factors, temperature variation, geographic distribution of deaths, and associated morbidities occurring during the heat season will also be conducted. Geographic location of heat related deaths and morbidity will be investigated using Geographic Information Systems (GIS) mapping, which will enable the identification of areas in Maricopa County that have a higher burden of heat-related deaths and/or morbidity.

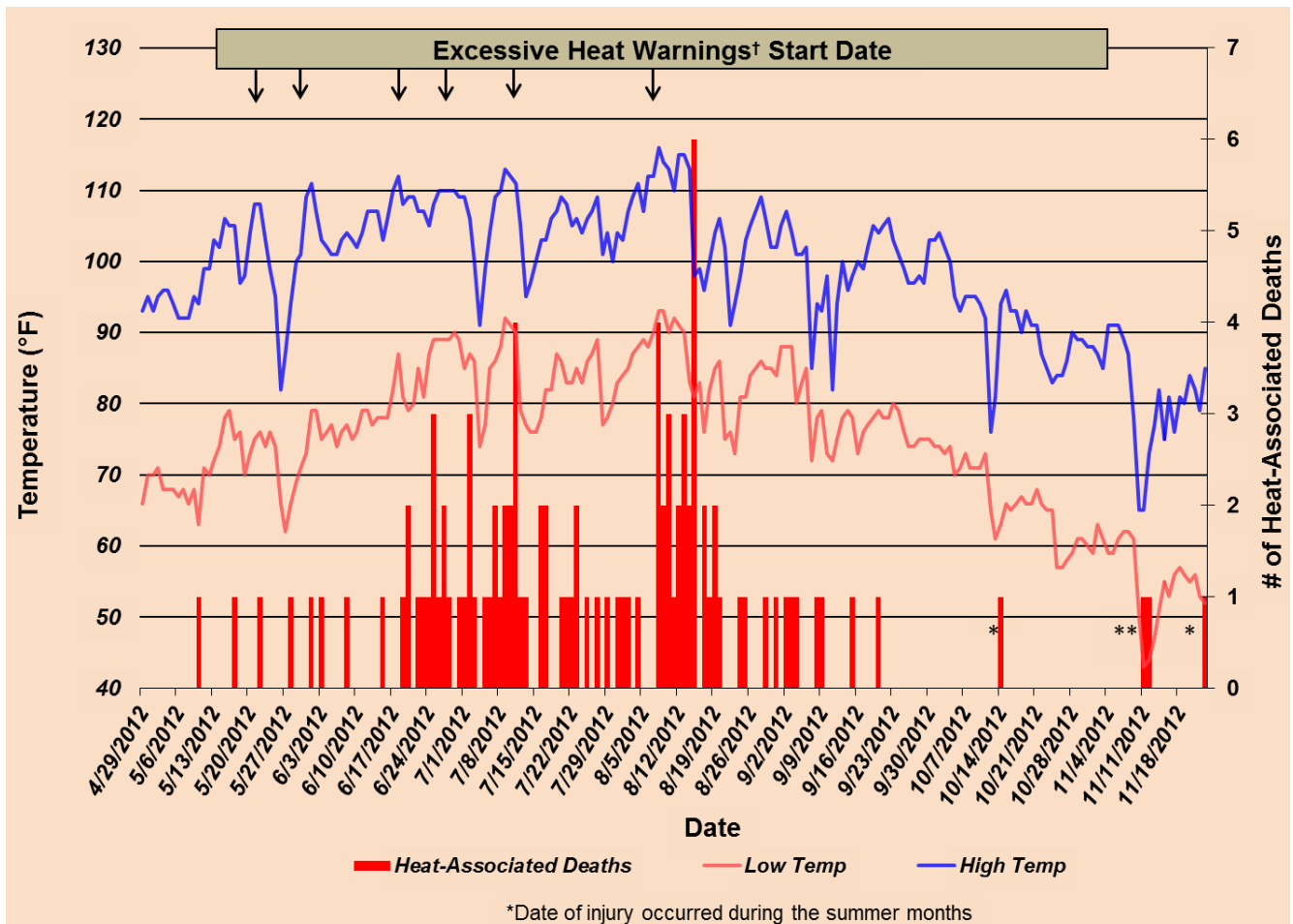
The primary goal of heat-associated death surveillance continues to be the reduction and eventually elimination of heat-associated deaths. The number of heat-associated deaths for 2012 compared to previous years is very concerning and highlights the need for community partners and public health to collaborate and respond to the needs of the community. Cooling and hydration stations were open to the public throughout the heat season, with additional stations opening during particularly long periods of excessive heat. With additional information about which populations and areas in Maricopa County are most affected by heat, we can continue to evaluate these services and augment them where they are most needed. Lastly, MCDPH will continue to use the information from, enhanced heat surveillance to inform healthcare providers and community partners of the dangers of excessive heat and ways to avoid it.

**To learn more about services provided for cooling and hydration during the summer months, or how you can help, please visit:**

**<http://www.maricopa.gov/publichealth/Programs/Heat/default.aspx>**  
**<http://www.cir.org/>**

## APPENDIX

**Graph A. Maricopa County Heat-Associated Deaths by Date of Death, Maximum and Minimum Temperatures and Excessive Heat Warnings [4/29/12-11/23/12 (n=102)]**



**<sup>†</sup>Exact Dates of Excessive Heat Warnings:**

5/21/2012 – 5/22/2012; 5/31/2012 – 6/1/2012, 6/18/2012; 6/27/2012 – 6/30/2012; 7/9/2012 – 7/10/2012; 8/6/2012 – 8/14/2012

**Table A. Heat-Associated Deaths (and Percentages) by Gender and Age Group, Maricopa County, 2012**

<b>Age Group</b>	<b>Death Count (%)</b>		
	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>0-4</b>	0 (0%)	2 (6%)	2 (2%)
<b>5-19</b>	1 (2%)	0 (0%)	1 (1%)
<b>20-34</b>	4 (6%)	0 (0%)	4 (4%)
<b>35-49</b>	17 (26%)	4 (11%)	21 (21%)
<b>50-64</b>	25 (38%)	9 (25%)	34 (33%)
<b>65-74</b>	7 (10%)	4 (11%)	11 (11%)
<b>75+</b>	12 (18%)	17 (47%)	29 (28%)
<b>All Ages</b>	<b>66 (65%)</b>	<b>36 (35%)</b>	<b>102 (100%)</b>

**Table B. Heat-Associated Death Rates per 100,000 Residents by Gender and Age Group, Maricopa County, 2012**

Age Group	Rate per 100,000 (n)		
	Male	Female	Total
<b>0-4</b>	0.0 (0)	1.5 (2)	0.7 (2)
<b>5-19</b>	0.0 (0)	0.0 (0)	0.0 (0)
<b>20-34</b>	0.5 (2)	0.0 (0)	0.2 (2)
<b>35-49</b>	3.1 (12)	0.3 (1)	1.7 (13)
<b>50-64</b>	5.6 (18)	2.3 (8)	3.9 (26)
<b>65-74</b>	4.8 (6)	2.1 (3)	3.3 (9)
<b>75+</b>	13.3 (12)	12.8 (16)	13 (28)
<b>All Ages</b>	<b>2.6 (50)</b>	<b>1.5 (30)</b>	<b>2.1 (80)</b>

**Table C. Heat-Associated Death Rates per 100,000 Residents by Age Group and Race/Ethnicity, Maricopa County, 2012**

Race/Ethnicity	Rate per 100,000 (n)							
	0-4	5-19	20-34	35-49	50-64	65-74	75+	Total
<b>White</b>	0.0 (0)	0.0 (0)	0.5 (2)	2.0 (9)	3.5 (17)	3.6 (8)	11.2 (21)	2.5 (57)
<b>Hispanic</b>	0.8 (1)	0.0 (0)	0.0 (0)	1.7 (4)	4.4 (5)	3.4 (1)	29.0 (5)	1.4 (16)
<b>Black</b>	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	3.5 (1)	0.0 (0)	0.0 (0)	0.0 (0)
<b>Asian/Pac. Islander</b>	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	4.6 (1)	0.0 (0)	25.6 (1)	1.4 (2)
<b>Native American</b>	18.8 (1)	0.0 (0)	0.0 (0)	15.9 (2)	13.0 (1)	0.0 (0)	0.0 (0)	6.4 (4)
<b>All Race/Ethnicities</b>	<b>0.7 (2)</b>	<b>0.0 (0)</b>	<b>0.2 (2)</b>	<b>1.9 (15)</b>	<b>3.8 (25)</b>	<b>3.4 (9)</b>	<b>12.6 (27)</b>	<b>2.1 (79)</b>



**Table D. Heat-Associated Death Rates per 100,000 Residents by Gender and Race/Ethnicity, Maricopa County, 2012**

Race/Ethnicity	Rate per 100,000 (n)		
	Male	Female	Total
White	3.4 (38)	1.7 (19)	2.5 (57)
Hispanic	1.4 (8)	1.4 (8)	1.4 (16)
Black	2.2 (2)	0.0 (0)	1.1 (2)
Asian/Pac. Islander	3.0 (2)	2.7 (2)	2.8 (4)
Native American	0.0 (0)	3.0 (1)	1.6 (1)
All Races	2.7 (50)	1.6 (30)	2.1 (80)

**Table E. Heat-Associated Deaths by Place Injury Occurred\* and Age, Maricopa County, 2012**

Age Group	Private Residence		Desert Area/Trail	Car	Urban Area				Total
	In	Out			Business	Street/Alley	Field/Park	Parking Lot	
0-4	1	0	0	1	0	0	0	0	2
5-19	0	0	1	0	0	0	0	0	1
20-34	0	0	1	2	0	0	0	1	4
35-49	4	1	2	2	3	5	5	0	22
50-64	11	7	3	6	2	3	0	0	32
65-74	8	0	1	1	0	1	0	0	11
75+	19	9	1	0	0	0	0	0	28
Total*	43	17	9	12	5	9	5	1	101

\*Excludes one case where place of injury (indoor/outdoor) was unknown.

**Table F. Heat-Associated Deaths by Indoor or Outdoor Occurrence\*, Age, and Gender Maricopa County, 2012**

Age Group	Indoor			Outdoor		
	Male	Female	Total	Male	Female	Total
0-4	0	1	1	0	1	1
5-19	0	0	0	1	0	1
20-34	0	0	0	4	0	4
35-49	4	0	4	14	4	18
50-64	6	5	11	18	3	22
65-74	5	3	8	2	1	3
75+	8	11	19	4	6	9
<b>Total</b>	<b>23</b>	<b>20</b>	<b>43</b>	<b>43</b>	<b>15</b>	<b>58</b>

\*Excludes one female case where place of injury (indoor/outdoor) was unknown.

**Table G. Heat-Associated Deaths by Use of Air Conditioning (AC) and Age Group, (Indoor Only) Maricopa County, 2012**

Age Groups	AC In Use	AC Not in Use	AC Not Available	AC Status Unknown	Total
0-4	0	1	0	0	1
5-19	0	0	0	0	0
20-34	0	0	0	0	0
35-49	0	2	1	1	4
50-64	0	9	1	1	11
65-74	2	4	2	0	8
75+	2	14	2	1	19
<b>Total</b>	<b>4</b>	<b>30</b>	<b>6</b>	<b>3</b>	<b>43</b>

**Table H. Drug and Alcohol Use, as Mentioned on the Death Certificate for Heat-Associated Deaths (and Percentages), by Homelessness, Maricopa County, 2012**

Death Count (%)			
	Transient	Drug and/or Alcohol Use	No Drug or Alcohol Use
Yes	12 (11.8%)	5 (41.7%)	7 (58.3%)
No	90 (88.2%)	26 (28.9%)	64 (71.1%)
<b>Total</b>	<b>102 (100%)</b>	<b>31 (30.4%)</b>	<b>71 (69.6%)</b>

**Table I. Heat-Associated Deaths (and Percentages) by Smoking/Tobacco Use, Maricopa County, 2012**

Smoking/Tobacco Use	n (%)
Yes	24 (23.5%)
No	24 (23.5%)
Past	3 (2.9%)
Unknown	51 (50.0%)
<b>Total</b>	<b>102 (100.0%)</b>

**Table J. Heat-Associated Deaths by Industry, Maricopa County, 2012**

Industry*	n
Installation, Maintenance, and Repair Occupations	15
Constructions and Extraction Occupations	14
Homemaker	13
Healthcare Practitioners and Technical Occupations	7
Transportation and Material Moving Occupations	7
Business and Financial Operations Occupations	5
Production Occupations	4
Education, Training, and Library Occupations	3
Farming, Fishing, and Forestry Occupations	3
Food Preparation and Serving Related Occupations	3
Office and Administrative Support Occupations	3
Legal Occupations	2
Management Occupations	2
Architecture and Engineering Occupations	1
Arts, Design Entertainment, Sports, and Media Occupations	1
Community and Social Services Occupations	1
Computer and Mathematical Occupations	1
Life, Physical, and Social Science Occupations	1
Sales and Related Occupations	1
Unknown	15
<b>Total</b>	<b>102</b>

\*Industry categories retrieved from the Bureau of Labor Statistics.

**Table K. Heat-Associated Deaths by Education Category, Maricopa County, 2012**

Education Category	n
High school graduate or GED completed	37
9 <sup>th</sup> through 12 <sup>th</sup> grade; no diploma	16
Some college credit, but no degree	14
8 <sup>th</sup> grade or less	9
Bachelor's degree (e.g.BA,BS)	8
Associate degree (e.g.AA,AS)	4
Not Classifiable	2
Master's degree (e.g.MA,MS,MEng,MEd,MSW,MBA)	2
Doctorate (e.g.PhD,EdD) or Professional degree (e.g.MD,DDS,DVM,LLB,JD)	1
Unknown	9
<b>Total</b>	<b>102</b>